Depression and Diabetes- Introduction

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Objectives

- To evaluate the burden of comorbid depression and diabetes
- To identify risk factors and screening for depression
- To understand the neurobiological connection between diabetes and depression

Objectives, cont'd.

- To describe the illness/nonillness and hopelessness models, CBT models for depression
- To describe brief intervention strategies, (e.g., *Bridging the Identity-System)*

Overview of Depression and Burden of Illness

- 20% of U.S. population affected, mostly women
- WHO – Global Burden of Disease – ranked number one in Disability-Adjusted Life Years (DALYs)
- Associated with poor physical health, CHD, smoking
- Economic burden - $33 billion in lost productivity alone

Co-morbidity (Wang, et al., 2005, *Archives)*

- 45% of sample with a 12-month disorder met criteria for 2 disorders.
- 60% of those with a disorder receive no treatment
- 32.7% receive treatment that is minimally adequate
- 48% minimally adequate in mental health setting vs. 12.8% in general medical setting, and 13.1% in non-health care resources

Burden of Disease

- Delay in seeking treatment, ranged from 6 to 8 years for depression
- Anxiety disorders even longer, 9 to 23 years
- Factors that contribute, early onset, male gender, less education, minorities

MOOD DISORDERS, DSM-IV

- Major Depressive Disorder
- Dysthymic Disorder
- Depressive Disorder (NOS)
- Bipolar I Disorder
- Bipolar II Disorder

MOOD DISORDERS, DSM-IV, cont'd.

- Cyclothymic Disorder
- Bipolar Disorder NOS
- Mood Disorder due to a General Medical Condition (20% to 25%; e.g., diabetes, MI, Ca, stroke)
- Substance-Induced Mood Disorder

Types of Symptoms in Depression

Psychological (Dorsal PFC)

- Decreased Attention/ Concentration
- Hopelessness/ Suicidality
- Anhedonia
- Apathy/Poor motivation
- Poor Libido
- Decrease Executive Skills

Somatic (Ventral PFC + Limbic + Paralimbic + Subcortical)

- Sleep disturbance
- Appetite disturbance
- Energy disturbance
- Psychomotor disturbance

Risk Factors for Depression

- Prior episodes
- Family history
- Prior suicide attempts
- Female gender
- Significant stressors, financial, lifestyle limitations
- Recent childbirth
- Medical comorbidity
- Alcohol or substance abuse
- Recent separation or bereavement

Depression Guideline Panel. Depression in Primary Care: Volume 1. Detection and Diagnosis. Clinical Practice Guideline, Number 5. Rockville, MD. U.S. Department of Health and Human Service, Public Health Service, Agency for Health Care Policy and Research. AHCPR Publication No. 93-0550. April 1993.

MAJOR DEPRESSIVE DISORDER: Diagnostic Criteria

- 5 of the following symptoms, present during same two week period, representing a change from previous functioning: (Criterion A *=s one of these must be present)
  - *Depressed mood; irritability and rejection sensitivity common in women, children and adolescence
  - *loss of interest or pleasure- anhedonia
  - insomnia or hypersomnia

MAJOR DEPRESSION: Criteria, cont'd.

- Unintentional weight or appetite loss or gain
- Psychomotor agitation or retardation
- Fatigue
- Feelings of worthlessness or guilt
- Diminished ability to concentrate, indecisiveness
- Recurrent thoughts of death, dying

Unipolar Depression

- Untreated - duration 6 to 24 months; 2/3rds achieve spontaneous recovery
- Risks: incomplete recovery, previous recurrences, family history, history of "double depression" (depression with dysthymia)
- Sleep as a biological marker (?) < total sleep; >sleep latency, <REM latency,>REM density, <stage 4 sleep

Atypical Specifier for Depression

- Criterion A: Mood reactivity (capacity to be cheered up with positive events)
- Criterion B: Two of the following: increased appetite or weight gain, hypersomnia, leaden paralysis, long-standing pattern of extreme sensitivity to interpersonal rejection
- More common in women (2-3xs); younger vs. older

Melancholic Specifier

- Criterion A: loss of all pleasure; lack of reactivity
- Criterion B: distinct quality of depressed mood; worse in AM; early wakening; psychomotor retardation or agitation; anorexia or weight loss; inappropriate guilt

Major Depression: R/O, cont'd.

- No causative organic factor
- Not a normal reaction to death of a loved one
- No hallucinations or delusions before or after remission of mood symptoms
- Not superimposed on schizophrenia, or other psychotic disorders

Depression and Medical Illness

- Hospitalized patients - 20% to 30%
- Primary care 5% to 20%
- Under recognized and treated - high cost
- Complicates course of medical illness and psychiatric hospitalization:
  - 14 days without depression
  - 20 days with

  (Sloan et al., 1999)

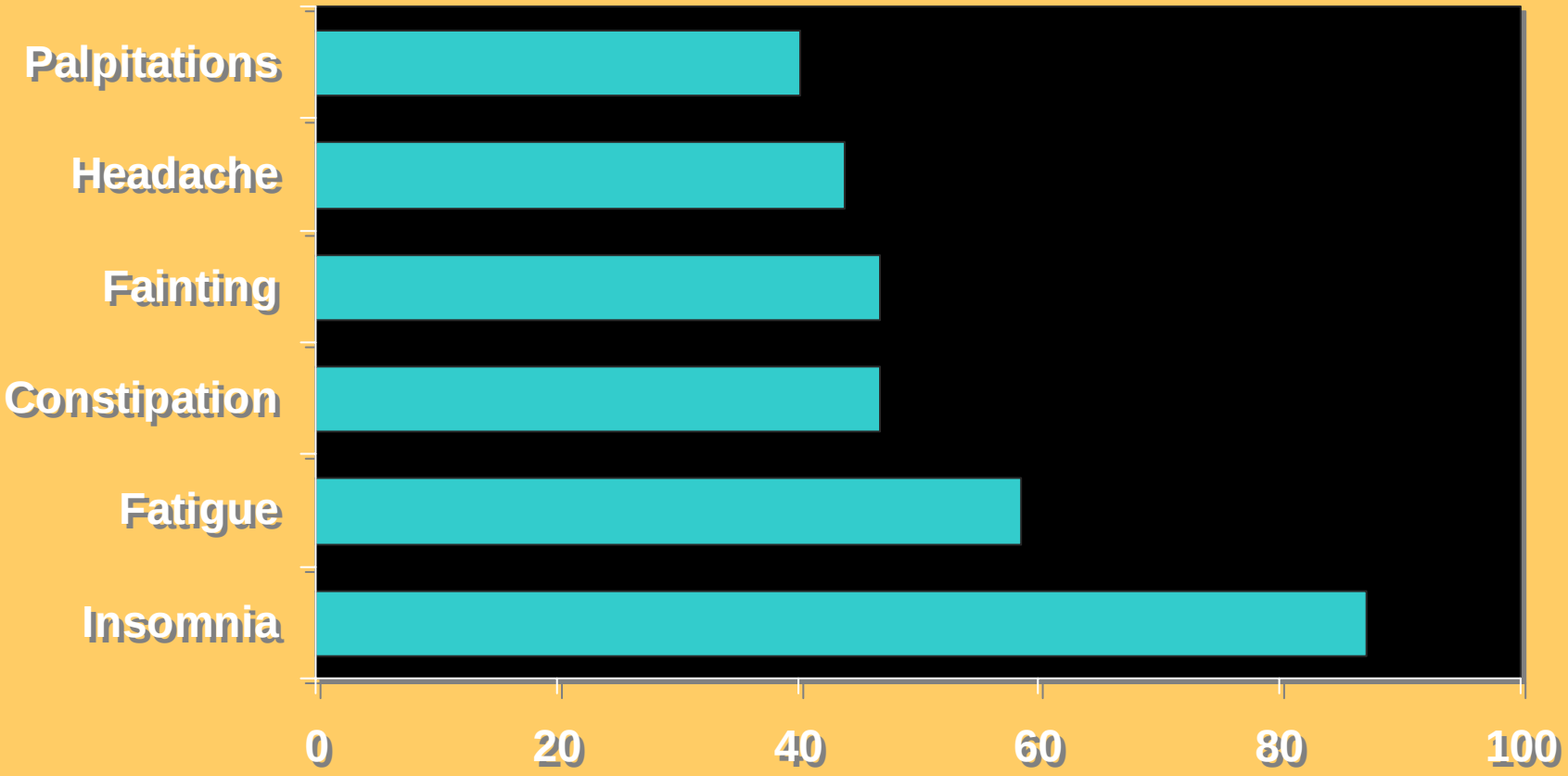
Depression and Heart Disease

- Depression after MI
- Depression During CHD
- Depression Predicts MI in Patients w/ CHD
- Depression Predicts CHD
- Depression and Higher Mortality (among women)
- Depression and Heart Rate Variability
- Depression and Platelet Function

Physical Illness cont'd.

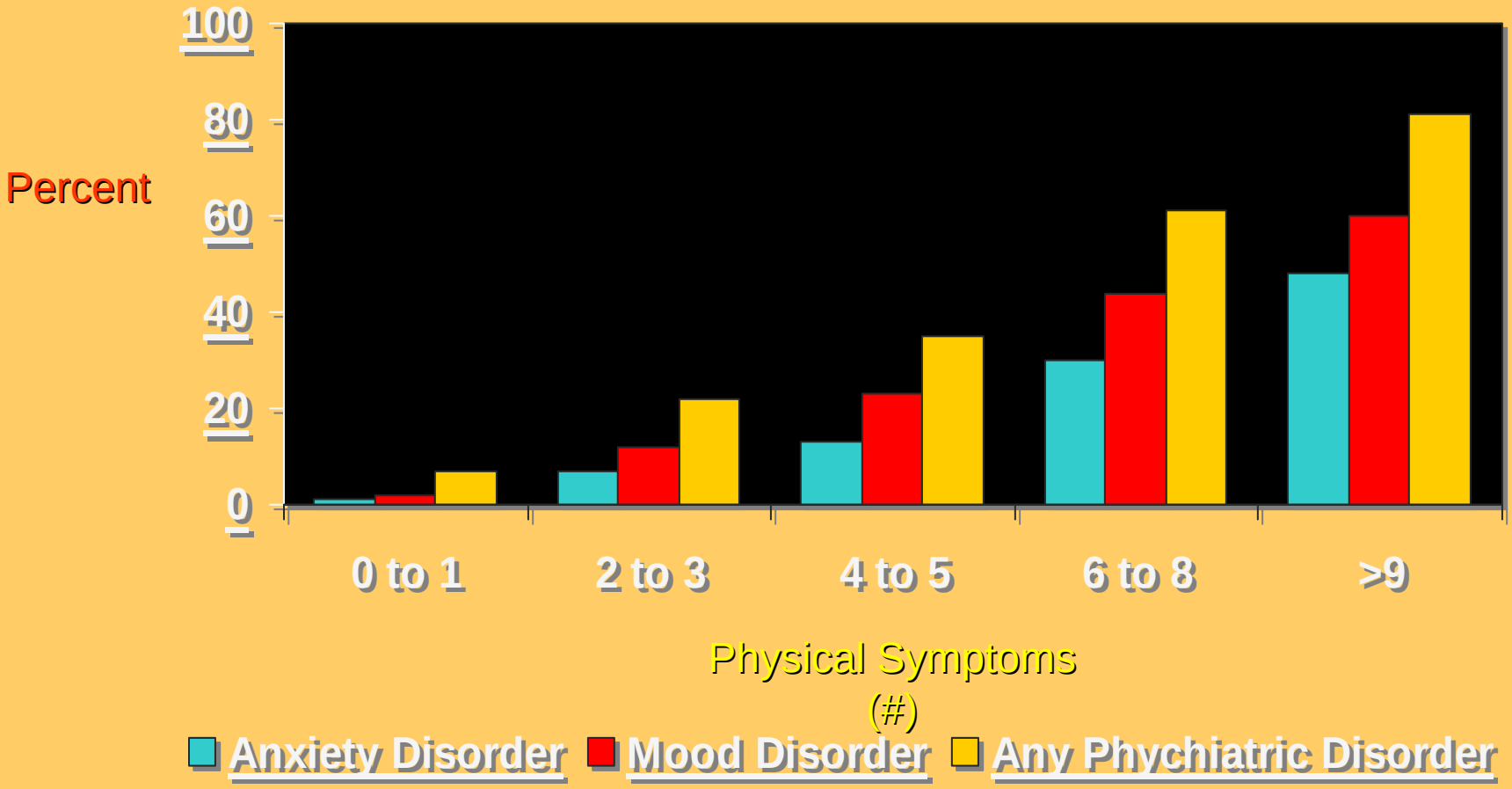
- Depression and HTN
- Depression and Medication Adherence in Elderly
- Hopelessness and Atherosclerosis Progression
- Depression and stroke
- Depression and diabetes

Physical Symptoms in Patients With Depression Often Attributed To Psychiatric Illness



Kroenke and Price. *Arch Intern Med*. 1993;153:2474.

Physical Symptoms Risk Of Psychiatric Disorder



Kroenke et al. *Arch Fam Med*. 1994;3:774.

Diabetes and Depression

. . . is there a connection?

Relationship between Depression and Diabetes (Regenold & Marnao, 2005, *Psychiatric Times*)

- Thomas Willis, MD, reported connection between glucose metabolism and mental illness in late 17th century
- 6.3% of population with diabetes (CDC, 2003)
- Studies of DM and depression vary in methodology and definition of depression
- Anderson et al. (2001) *Diabetes Care,* meta-analysis of 42 studies that supported the presence of DM doubles odds of comorbid depression, and complications

Diabetes and Depression, cont'd.

- Black et al. (2003), depression predicts greater mortality in type 2 DM
- Hospitalized patients with Bipolar Disorder have increased rates of DM
- Pathophysiological cause versus stress of mental illness

Diabetes and Depression, cont'd.

- ECA Study (Eaton et al., 1996), pts. With MDD in 1981 had twice relative risk of developing type 2 DM in ensuing 13 years, even after controlling for DM risk factors
- Concluded that depression can be a risk factor for diabetes

Pathophysiology

- Mechanisms not completely understood
- Two disorders have some overlap in their pathophysiology, type 2 DM and depression share insulin resistance and non-suppression in the Dexamethasone Supression Test (DST)

Pathophysiology, cont'd.

- MDD and MD found to be risk factors for brain white matter disease (Kamide et al., 1997; Lenze et al., 1999; Schmidt et al., 1992)
- Diabetic neuropathy is risk factor for depression (Geringer et al., 1988; 1995)
- Psychotropic drugs and weight gain, metabolic syndrome

Possibly Relevant Neurocircuits

- Orbito-Frontal Cortex
- Dorsal Raphe Nuclei
- Serotonin

Brain

- Hypothalamus
- Corticotropin Releasing Factor
- Pituitary

Cortisol

Role of Serotonin

- 5HT levels and blood platelet counts sig higher among patients with CHD (Vikenes, et al. (1999). *Circulation*, 100, 483.)
- Other research suggests that SSRIs may protect against MI because of inhibitory effect on 5HT-mediated platelet activation (Sauer, et al. (2001). *Circulation*, 104, 1994.)

Corticosteroids

- Corticosteroids induce >CHOL, >triglycerides, HTN
- Depression and stress stimulate the hypothalamic-pituitary-adrenal (HPA) axis, resulting in release of glucocorticoids such as cortisol

Sympathoadrenal Activity

- Increased sympathoadrenal (SPA) activity in depressed patients in response to stress
- SPA activity plays role in regulating metabolic and CV activity
- SPA activation can lead to >catecholamines Epi and NE, >HR, >BP,>platelet aggregation = thrombosis and atherosclerosis

Immune Response

- Depression associated with immune response, > production of proinflammatory and immunoregulatory cytokines.
- Overproduction of cytokines can contribute to HF and may predict more serious disease (cytocine IL-6, independent risk factor for death)
- Increases in IL-6 associated with depression independent of HF

Suarez, et al. (2003). *Psychosom Med*, 65, 362. Pasic, et al., (2003). *Psychosom Med*, 65, 181.)

C-Reactive Protein (CRP)

- CRP another marker of inflammation
- Study of men with histories of depression were twice as likely to have elevated levels of CRP
- No association seen in women

Danner, et al. (2003). *Psychosom Med,* 65, 347.

Depression and Anxiety Disorders, Comorbidity

- Among community surveys of persons with depression, approximately 50% are also suffering from an anxiety disorder
- Surveys in primary care suggest the rate of comorbidity is even higher, 75%
- Odds ratio, 3.3 fold to 8.2 fold increase in likelihood of depression/anxiety comorbidity
- Odds ratio of anxiety and depression comorbidity is 7 to 62.

Consequences of Comorbidity

- Suicide – 70% higher
- Increased hospitalization
- PTSD highest comorbidity rate
- Increases chronicity

Panic Disorder and Diabetes (Ludman, 2005, *Clinical Psych News*)

- Panic symptoms linked to patients with diabetes and to depression and diabetes.
- Related to poor functional and clinical indicators
- Alert for panic Sxs as well as depression- mistaken for hypoglycemia

Panic, cont'd.

- Study, NIMH, survey, 9,063 individuals, diabetes registry, Washington State, data available for 4,385, 4.4% met criteria for panic (n = 194)
- More likely to be female, employed, and to have depression, higher hemoglobin A1c values, complications, more disability, and lower social functioning
- Treatment impacts diabetes Sxs, self-care, and quality of life

Depression as Source of Treatment Resistance

- A meta-analysis of 21 studies designed to improve treatment adherence did NOT show significant effects (Vermeire et al ., 2005)
- ". . . The evidence on adherence to treatment recommendations in diabetes is almost nonexistent" (Vermeire et al., 2005, p. 13)

Depression, Anxiety . . .

- Role in treatment resistance?
- Role in self-management

Depression and Self-Management

- Diabetes is a chronic disease that requires a high degree of self-management.
- Skills such as: (1) obtaining medical management, (2) finding meaningful life goals, and (3) managing the emotional impact of having a chronic condition (Lorig & Holmon, 2000)

Depression and Self-Management, cont'd.

- Management skills are impacted by symptoms of depression:
  - Problem solving and decision-making – poor concentration and memory, self-absorption
  - Motivation, taking action – avolition
  - Interest in activities – anhedonia
  - Sleep abnormalities – fatigue
  - Managing emotions – withdrawal, worry, irritability, sadness, hopelessness, helplessness

Theoretical Perspectives

Hopelessness and/or
Depression?

Sick, sad, hopeless, helpless . . .

- And/or depressed???
- Does living with chronic illness lead to depression/hopelessness?
- Healthy people tend to attribute more unhappy/unpleasant moods to chronically ill persons than chronically ill attribute to themselves (e.g., chronic kidney disease,ALS)

(Rabkin, J. G. et al., (2005). *Neurology,* 65, pp. 62-67; Riis, J. et al. (2005). *J of Experimental Psych: Gen.*,34, 3-9)

Hopelessness as a Response to Physical Illness

- Expectation of negative outcomes and helplessness
- One symptom of depression; pervasive pessimism about the future
- Beck, "Hopelessness Scale"

Beck's Theory of Depression

- **Cognitive triad:** negative representations of (1) self, (2) personal world, and (3) the future
- Underlying cluster of dysfunctional beliefs and assumptions
- Vulnerability to depression – ***stress diathesis model***

Autonomous versus . . . Sociotropic

- Autonomous individuals depressed after failure in accomplishing an event
- Socioptropic individuals become depressed after failure in a relationship

Cognitive Specificity . . . additional dimensions

- **Affective dimension:** lack of hope, enthusiasm, or faith
- **Motivational dimension:** lack of belief in one's ability to change or improve the future
- Loss and defeat, hopelessness related to depression
- Hopelessness, failure to succeed, wish to die, correlated with suicide, along with expectations of lethality

State or Trait

- Trait – general predisposition
- State – limited to certain aspects of life

Nursing Perspective (Dunn, 2005)

- Experiential: discouragement, despair, lack of resources, lack of expectation for desired outcomes to occur
- Relational: other's can't help, lack of trust, social withdrawal
- Behavioral/cognitive: difficulty thinking, setting goals

Learned Helplessness and Hopelessness

- Negative future expectations
- Loss of control
- Passive acceptance of futility
- Emotional negativism
- Hopelessness as primarily a trait (Drew, 1990)

Hopelessness

- Subtype of depression – (Abramson et al. 1989)
- Increases vulnerability to depression
- Hopelessness is a focus on expectations for the future and on one's ability to change the future
- Hopelessness related to suicidal thoughts
- Can be a state or trait

Hopelessness as a Predictor

- CHD – (Anda et al., 1993)
- Cancer, MI, and HTN (Everson, et al., 1996; 2000)

Interventions

Family Appraisal
Drugs and CBT
Motivational Interviewing
"Bridging the I-System

Recognition and Treatment

- Assumption that feeling depressed is part of chronic illness
- Recognition of comorbid mental disorder – symptom profile
- History of changes in mood and quality of life

Quick Screening Evaluation

- Scale of one to ten – ten worst Sxs
- O = normal, no Sxs
- "Signal events"
- Early signs of relapse

Suicide And Depression

- Associated with mortality: suicide, accidents, exacerbation of medical illness (e.g., independent risk factor CVD)
  - 15%-20% commit suicide - may be overestimate, based on case fatality ratio 3%-5%; or 5 to 6xs the general population instead of 30 (Bostwick et al., 2000)
  - 10 times as many male acts
  - 80% of suicidal events associated with depression
  - Alcohol, drugs, panic, anxiety, med. illness, hopelessness, lack of social support, loss, unemployment, all increased risk

Evaluation for Suicide

- Presence of ideation, suicide, homicide
- Lethality of means
- Presence of psychosis
- Alcohol or substance abuse
- History of attempts and degree of seriousness
- Family history or recent exposure
- Family support; need for safety

What is "the problem" and who says?

- We learn about illness in family context
- Family and individual illness appraisal processes affect how individual responds to illness and treatment

ASSESSMENT: ILLNESS

- "HOW FAMILY BELIEVES RELATES TO ILLNESS
- SOLUTION-FOCUSED APPROACH
  (de Shazer et. al., 1986)
- ASSESSMENT OF MEANING:
  - *"Narrative Approach"*
    (Eron & Lund, 1993)
  - *"Illness versus Non-Illness" Distinction*
    (Navon, 1999)

FAMILY BELIEFS (cont'd)

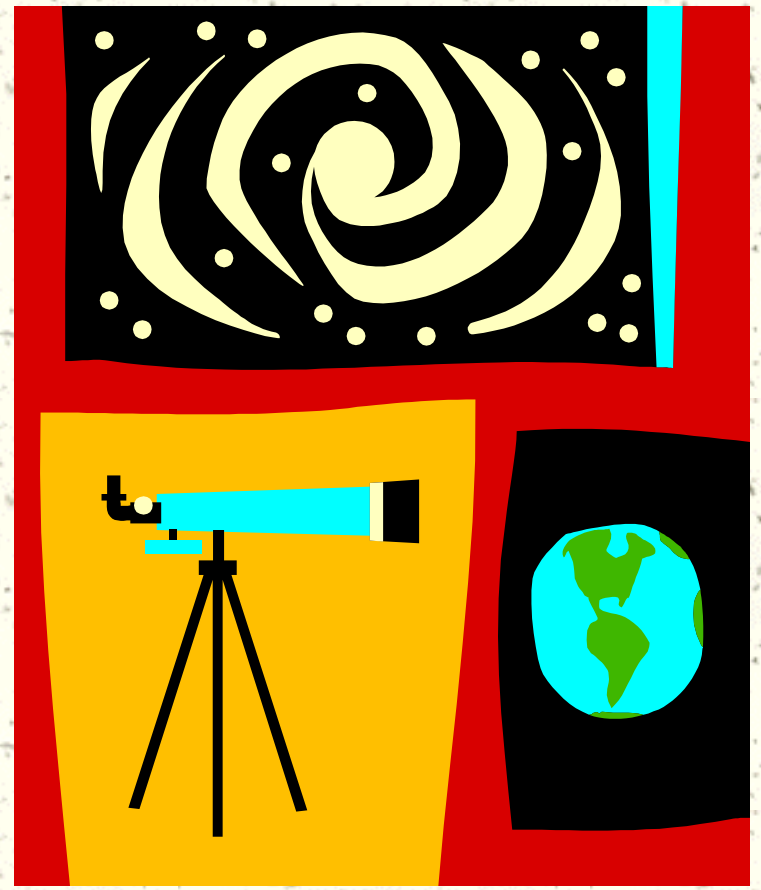
- VIEWS OF ILLNESS: *"Explanatory Models" (EM)*
  CAUSE(S) OF ILLNESS
  - *appraisal of causality "if only in good health"*
  - *relationship between physical illness, individual and the family*
  - *irreversibility of chronic conditions*
  - *"stuck" cases, loss of interest; no cure how can psychosocial interventions help?*
  - *expectations for rapid diagnosis and treatment*

FAMILY BELIEFS (cont'd)

- *black and white, single versus several issues*
- *one-sided versus multifaceted*
- *rigidity versus flexibility*
- *always depressed, total versus partial*

CONSTRUCTIVISM

- Reality constructed rather than discovered
- Knowledge is personal; filtered through lens of individual: interpretation of behavior of others
- Beliefs determine feelings and actions: involves both *"doing"* and *"viewing"*

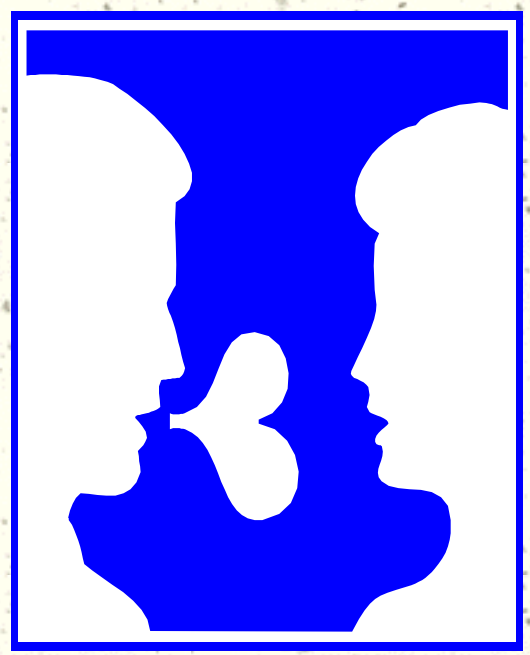


Narrative: cont'd.

- Meaning-making as part of motivation
- Connection between life events and emotion
- Construct views of each other in relationships

Narrative, cont'd.

- Analyze language to understand other's view of reality



KEY VIEWS OF SELF

"Preferred Attributions" About:

- Self
- Others
- Other's views of self

DISJUNCTIONS (Gaps)

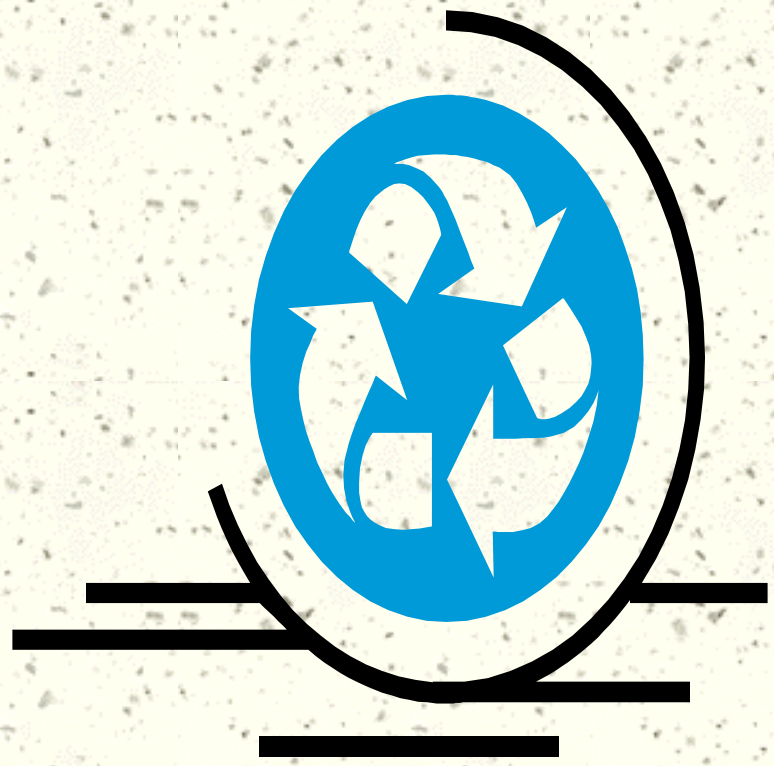
- See self differently
- See family members differently
- See family viewing self differently

PREFERRED VIEW

- *"NARRATIVE" OR "STORIED VIEW"*
  - *"restorying" or "co-created narratives"*
  - *fresh problem-solving frameworks develop from "therapeutic conversation"*

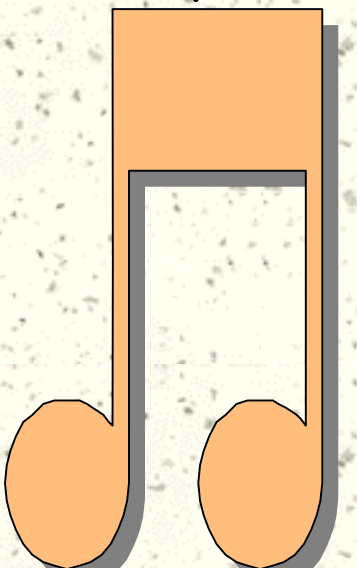
PATHWAYS TO PROBLEMS (Problem-Cycle Formation)

- Event(s) take place, often transition period
- See self, or others seeing you that contradict preferred view
- Attempts to correct discrepancies (e.g., demand respect)



"Therapeutic Conversation:" What is illness and What is Non-Illness

- Strategy of:
  - rapport building around illness themes
  - cognitive distinction- work to differentiate illness from non-illness issues in "stuck cases"
  - freedom to choose non-illness direction; ability to control non-illness issues
  - then address beliefs



PROBLEM SOLUTION

- Help to maintain preferred view
- Identify "stories" of preferred view(s)
- Non-illness focus; alternative explanation for "problem"
- Narrowing of gap or disjunction leads to less of the problem maintaining behavior
- Increase flexibility in system

Family-Centered Approach, Relation-Based Interventions

- Has anyone else in family had the problem?
- What do family members believe caused the problem?
- Who in family is most concerned about the problem?
- Have there been any recent changes in family?
- How can your family be helpful to you?

Cognitive Behavior Therapy and Pharmacotherapy

Both and . . . Either/or??

Pharmacotherapy – Psychotherapy ???

- What is best, cost effective treatment????
- Short-term versus long term?

Pharmacotherapy

- SSRIs can effect glucose control
- Maintain daily records

Current State of Cognitive Therapy (Beck, A.T. (2005). *Arch of Gen Psych*, 62, 953-959.)

- 40 year retrospective review of literature
- Support for cognitive model of depression
- Overall CBT, CT, has been shown to be effective in reducing symptoms and relapse rates with or without medications.

Prevention of Relapse (Hollan, S. D., et al., 2005. *Arch of Gen Psych*, 62, 417-422.)

- Antidepressant therapy prevents the return of depressive symptoms, but only as long as treatment is continued
- Cognitive therapy appears to have an enduring effect that extends beyond end of treatment for moderate to severe MDD
- According to recent study, CT is as effective as keeping patients on medications

Neurobiological Perspective on CBT and Medications

Recent Canadian Study

University of Toronto

(Mayberg, H., & Segal, Z. (2004). *Archives of General Psychiatry*, Jan.)

- Depressed brain responds differently to drugs than to CBT therapy – PET imaging
- Drugs reduce activity in limbic system (emotion centers- stress, negative emotions)
- CBT quiets overactivity in prefrontal cortex – cognition, planning, etc.
- Development of ***override capacity*** – top down – emotions bubble up from limbic area

Canadian Study, cont'd.

- Cost of therapy 15-20 sessions Xs $100 = $1500 to $2000; drugs cost about $1000 per year plus any visits
- Small study: drugs, Paxil (n =13) vs. CBT (n=14) – both groups improved
- Larger study of relapse rates showed 80% relapse in year after drugs are discontinued
- CBT only, 25% relapse rate (i.e., defined as those who seek treatment)
- No random assignment – patients expressed preference for therapy over drugs

RATIONALE for Treatment

- Development of Medical-Cost Offset Mindset
  - Medicaid Study: 25% of hospital admissions with substance abuse as underlying cause of admission (Fox, Merrill, & Chang, 1995)
  - Failure to refer; failure to document
  - Up to 1/3 rd of patients present in primary care with often unrecognized anxiety and depression disorders (Fifer, Mathias, Patrick et al., 1994)

Therapy and Medication: DM

- Cognitive Behavioral Therapy (CBT) versus no specific treatment, 85% of 51 patients with DM, Type 2 and MDD achieved remission versus 27% of controls (Lustman et al., 1998)
- At 6 months control showed significantly lower glycosylated hemoglobin

What Makes a Treatment Resistant Patient?

- Patient disagrees with/or is indifferent to recommended treatment
- Repeats self-defeating behaviors
- Refuses to relate to illness model
- Does not seek information about illness
- Relapses

Benefits of Good Connections: Developing Self-Efficacy

- Quality of relationships count
- Network of relationships
- Strengthens self-efficacy
- ***Sense of belonging and stress reappraisal impact depression***
  (Chanokruthai, et al., 2005, *Arc. Psych Nursing*)

Influence of Providers on Patient Behavior

- Decrease drop out rates
- Improve outcomes
- Positive relationships including empathy, improve patient outcomes

Quick Strategies to Reduce Stress

- Meditation
- Visualization, guided imaging
- Bridging the "Identity-System"

Bridging the Identity-System (Stanley Block, 2005)

- *Come to Your Senses,* recent publication
- Identity-System as "life's compass"
- Core beliefs and requirements
- Natural system and I-System functioning

Bridging as "Mini Zen" Experience

- Zazen meditation developed 1,600 years ago by Bodhidharma, 28th in series of masters reaching back to Siddartha himself (Buddha)

This is your brain on Zazen
Andrew Newberg and Eugene d'Aquili- University of Pennsylvania)

- SPECT-scans (single photon emission computed tomography); use of radioactive tracer to determine which areas of brain are more or less active under certain circumstances
- Locks onto brain cells and remains for hours
- Subjects were 8 Tibetan monk meditators

Changes in Brain

- Areas of brain before meditation, were pink, became red hot after hour of meditation.
- All areas associated with thinking and planning showed significant increases in activity: ***attention association area - will***
  - Dorsolateral prefrontal cortices
  - Inferior and orbital frontal cortices
  - Sensorimotor and dorsomedial cortices

Changes, cont'd.

- Limbic system, emotional brain activated also:
  - Thalamus
  - Cingulate gyrus

Decreased Activity

- Posterior superior parietal lobes in back of head (e.g., increased left PFC, decreased left superior parietal area)
  - Orientation association area decreased, critical role in defining the *self*
  - Information from touch, vision, and hearing, organized into 3-D picture of body in space
  - Left lobe define limits of body; rt. Locates body in space – distinguish between self and nonself

Two Layers of Mental Life

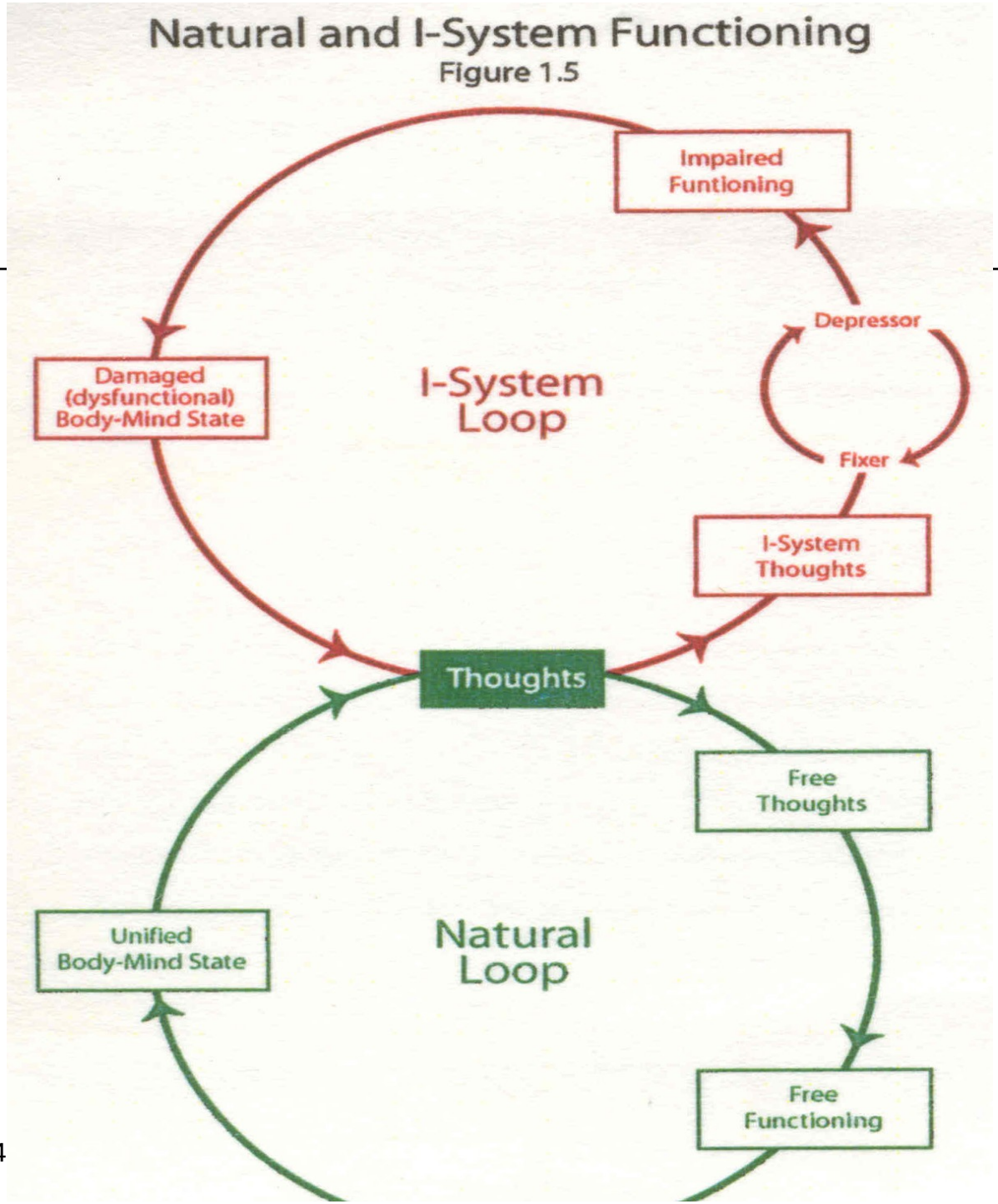
- Edelman's theory: (1) Core or primary consciousness, formation of scenes from sensory data, (2) Secondary consciousness, involves self-awareness
- Primary cs. In thalamocortical loop, attention association area
- Meditation send signals from thalamus to cortex (will), decreases output to other areas

Changes in Meditation. . .
deafferentation

- Power to one area decreases power to another – less available to usual sense of self
- Monks lost secondary consciousness
- Shortage to parietal lobe, sends SOS to limbic system to make it work harder, even less power to parietal lobes – reverberating circuit, deeper levels of meditative calm- experience oneness with universe, prayer also does same thing.

Teach Bridging to Yourself and Patients

- Relaxing the I-System
- Steps: awareness of negative thoughts; allow thoughts into awareness; refocus, or bridge to natural state of consciousness
- Equivalent to shifting from self (parietal lobe, self-system), to prefrontal association area, where planning and organizing take place)


Natural and I-System Functioning
Figure 1.5
Impaired Funtioning
Depressor
Damaged (dysfunctional) Body-Mind State
I-System Loop
Fixer
I-System Thoughts
Thoughts
Free Thoughts
Unified Body-Mind State
Natural Loop
Free Functioning

Red Circle, Stuck – Green, Natural

- Red circle = depressive reiteration of negative cognitions about self
- Green circle = letting go, refocusing, natural self

Bridging, cont'd

- Patient not "damaged or defective" because of illness
- Understand "requirements" or "fixers" for happiness may keep patient from experiencing pleasure in the moment

Summary

- Depression serious complication for any comorbid illness, particularly so for DM, CVD, etc.
- Hopelessnes/helplessnes theoretical perspective on depression and diabetes may be most meaningful model

Summary, cont'd.

- Recognition of depression by conversation with patient and family if possible, particularly for children and adolescents
- Determine family and patient explanatory models of illness and treatment
- Determine patient's preferred views, self-others
- Help patient/family differentiate illness from non-illness factors

Summary, cont'd.

- Assess for suicidal risk
- Pharmacotherapy and CT or CBT best interventions to prevent relapse
- Consider importance of relationship with patient
- Suggest simple strategies that patient and family members can both use such as "bridging the I-System"

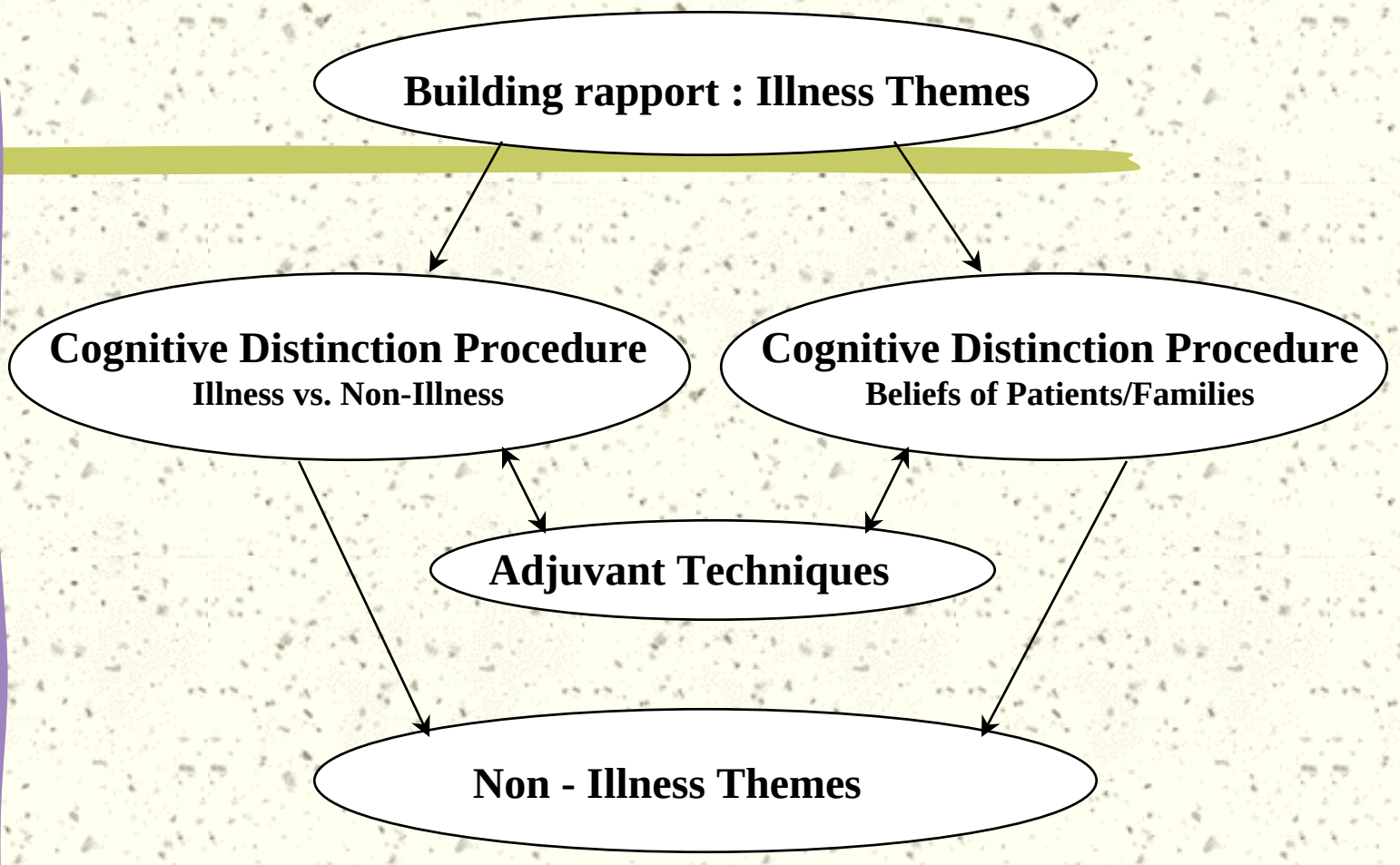


Figure 1. The Non-Illness Intervention Model **(Navone, 1999, p.260)**

Feeling overwhelmed by a wave of too much information?

Take a break… visualize yourself here….